

- Snap Mount
- Specific Design For Higher Ripple Current
- 350 to 500VDC Voltage Range
- RoHS Compliant
- +85°C Maximum Temperature
- 15,000 Hours Lifetime at +85°C



The U92X series is a longest life series specifically designed for higher ripple current capability. The U92X capacitors have an endurance rating of 15,000 hours at +85°C with the rated ripple current applied. All U92X series capacitors are RoHS compliant and available in a variety of sizes, with or without an end disk, and encased in a PET sleeve or standard Pb-free PVC sleeve. Snap-in terminals (2, 4 or 5-pin configurations) are available as standard or optional styles depending on case size. Straight standoff terminals (5-pin configuration) are an option for 40, 45 and 50mm can diameters.

Summary of Specifications

- PC board snap-in or straight standoff terminals available as standard or optional styles depending on pin styles and case size.
- Capacitance range: 150 to 3,300µF.
- Voltage range: 350 to 500VDC.
- Category temperature range: -25°C to +85°C.
- Leakage current: $3\sqrt{CV}$ (µA) or 3mA, whichever is smaller, after 5 minutes at +20°C.
- Standard capacitance tolerance: ±20%
- Nominal case size (D × L): 30 × 40mm to 50 × 105mm.
- Rated lifetime: 15,000 hours at +85°C with the rated ripple current applied.

U92X Series

U92X Specifications - Snap Mount

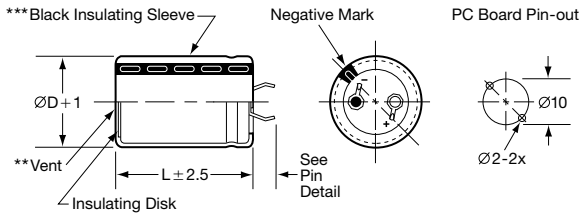
Item	Characteristics																											
Category Temperature Range	-25 to +85°C																											
Rated Voltage Range	350 to 500VDC																											
Capacitance Range	150 to 3,300 μ F																											
Capacitance Tolerance	$\pm 20\%$ (M) at +20°C, 120Hz																											
Leakage Current	$I = 3\sqrt{CV}$ (μ A) or 3mA, whichever is smaller, after 5 minutes at +20°C. Where I = Max. leakage current (μ A), C = Nominal capacitance (μ F) and V = Rated voltage (V)																											
Dissipation Factor (Tan δ)	At +20°C, 120Hz <table border="1" style="margin-left: 20px;"> <tr> <td>Rated Voltage (V)</td> <td>350-400</td> <td>420-500</td> </tr> <tr> <td>Tan δ (DF) Max.</td> <td>0.15</td> <td>0.20</td> </tr> </table>	Rated Voltage (V)	350-400	420-500	Tan δ (DF) Max.	0.15	0.20																					
Rated Voltage (V)	350-400	420-500																										
Tan δ (DF) Max.	0.15	0.20																										
Low Temperature Characteristics	At 120Hz, impedance (Z) ratio between the -25°C value and +20°C value shall not exceed the values given below. <table border="1" style="margin-left: 20px;"> <tr> <td>Rated Voltage (V)</td> <td>350-500</td> </tr> <tr> <td>Z (-25°C) / Z (+20°C)</td> <td>8</td> </tr> </table>	Rated Voltage (V)	350-500	Z (-25°C) / Z (+20°C)	8																							
Rated Voltage (V)	350-500																											
Z (-25°C) / Z (+20°C)	8																											
Rated Ripple Current Multipliers	Ambient Temperature (°C) <table border="1" style="margin-left: 20px;"> <tr> <td>+45°C</td> <td>+65°C</td> <td>+85°C</td> </tr> <tr> <td>2.82</td> <td>1.73</td> <td>1.00</td> </tr> </table> Frequency (Hz) <table border="1" style="margin-left: 20px;"> <tr> <td>DC Rated Voltage</td> <td>50Hz</td> <td>120Hz</td> <td>300Hz</td> <td>1kHz</td> <td>10kHz</td> <td>100kHz</td> </tr> <tr> <td>350-450V</td> <td>0.77</td> <td>1.00</td> <td>1.16</td> <td>1.30</td> <td>1.41</td> <td>1.43</td> </tr> <tr> <td>500V</td> <td>0.70</td> <td>1.00</td> <td>1.16</td> <td>1.30</td> <td>1.41</td> <td>1.43</td> </tr> </table>	+45°C	+65°C	+85°C	2.82	1.73	1.00	DC Rated Voltage	50Hz	120Hz	300Hz	1kHz	10kHz	100kHz	350-450V	0.77	1.00	1.16	1.30	1.41	1.43	500V	0.70	1.00	1.16	1.30	1.41	1.43
+45°C	+65°C	+85°C																										
2.82	1.73	1.00																										
DC Rated Voltage	50Hz	120Hz	300Hz	1kHz	10kHz	100kHz																						
350-450V	0.77	1.00	1.16	1.30	1.41	1.43																						
500V	0.70	1.00	1.16	1.30	1.41	1.43																						
Endurance (Load Life)	The following specifications shall be satisfied when the capacitors are restored to +20°C after subjecting them to DC voltage for 15,000 hours at +85°C with the rated ripple current applied. The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors. Capacitance change: $\leq \pm 20\%$ of initial measured value Tan δ (DF) : $\leq 200\%$ of initial specified value Leakage current : \leq initial specified value																											
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to +20°C after exposing them for 1,000 hours at +85°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change: $\leq \pm 20\%$ of initial measured value Tan δ (DF) : $\leq 150\%$ of initial specified value Leakage current : \leq initial specified value																											

U92X Series

Diagram of Dimensions - Snap Mount

Snap Mount

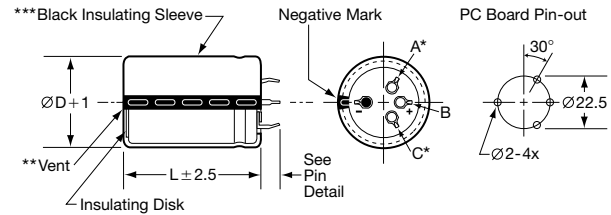
VSN Snap-in $\varnothing 30$ and $\varnothing 35$ standard
VNN Snap-in $\varnothing 30$ and $\varnothing 35$ optional



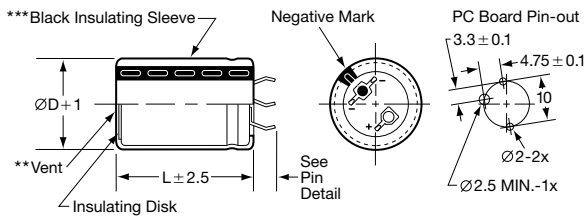
Snap Mount

Unit: mm

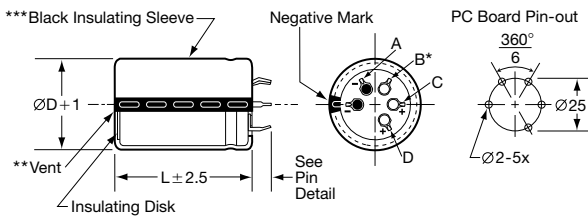
VND Snap-in $\varnothing 35$ and $\varnothing 40$ standard; $\varnothing 45$ optional
VSD Snap-in $\varnothing 35$ and $\varnothing 40$ optional



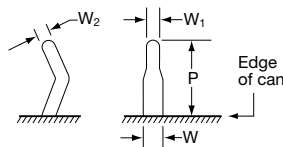
VEN Snap-in $\varnothing 30$ and $\varnothing 35$ optional



VNT Snap-in $\varnothing 45$ and $\varnothing 50$ standard



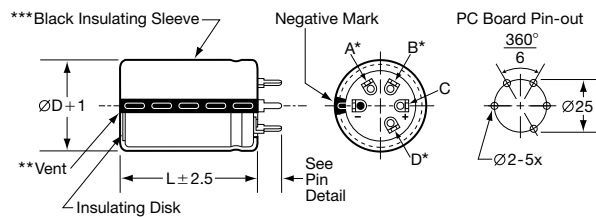
VS, VE & VN Snap-in Pin Dimensions



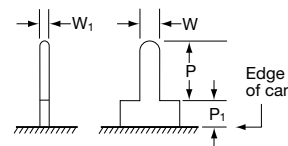
Type	P	W	W ₁	W ₂
VSN $\varnothing 30$	4.0 ± 0.5			
VSN $\varnothing 35$	3.5 ± 0.5			
VNN $\varnothing 30-\varnothing 35$	5.8 ± 1.0			
VEN $\varnothing 30-\varnothing 35$	4.0 ± 0.5	1.5 ± 0.2	0.8 ± 0.1	0.8 ± 0.1
VSD $\varnothing 35-\varnothing 40$	3.5 ± 1.0			
VND $\varnothing 35-\varnothing 45$	5.8 ± 1.0			
VNT $\varnothing 45-\varnothing 50$	5.8 ± 1.0			

Straight Pin Mount

VQT Straight Standoff $\varnothing 40$, $\varnothing 45$ and $\varnothing 50$ optional



VQ Straight Standoff Pin Dimensions



Type	P	P ₁	W	W ₁
Standoff Pin (VQ)	3.75 ± 1.0	2.0 max.	1.5 ± 0.1	0.7 ± 0.2

CAUTION:

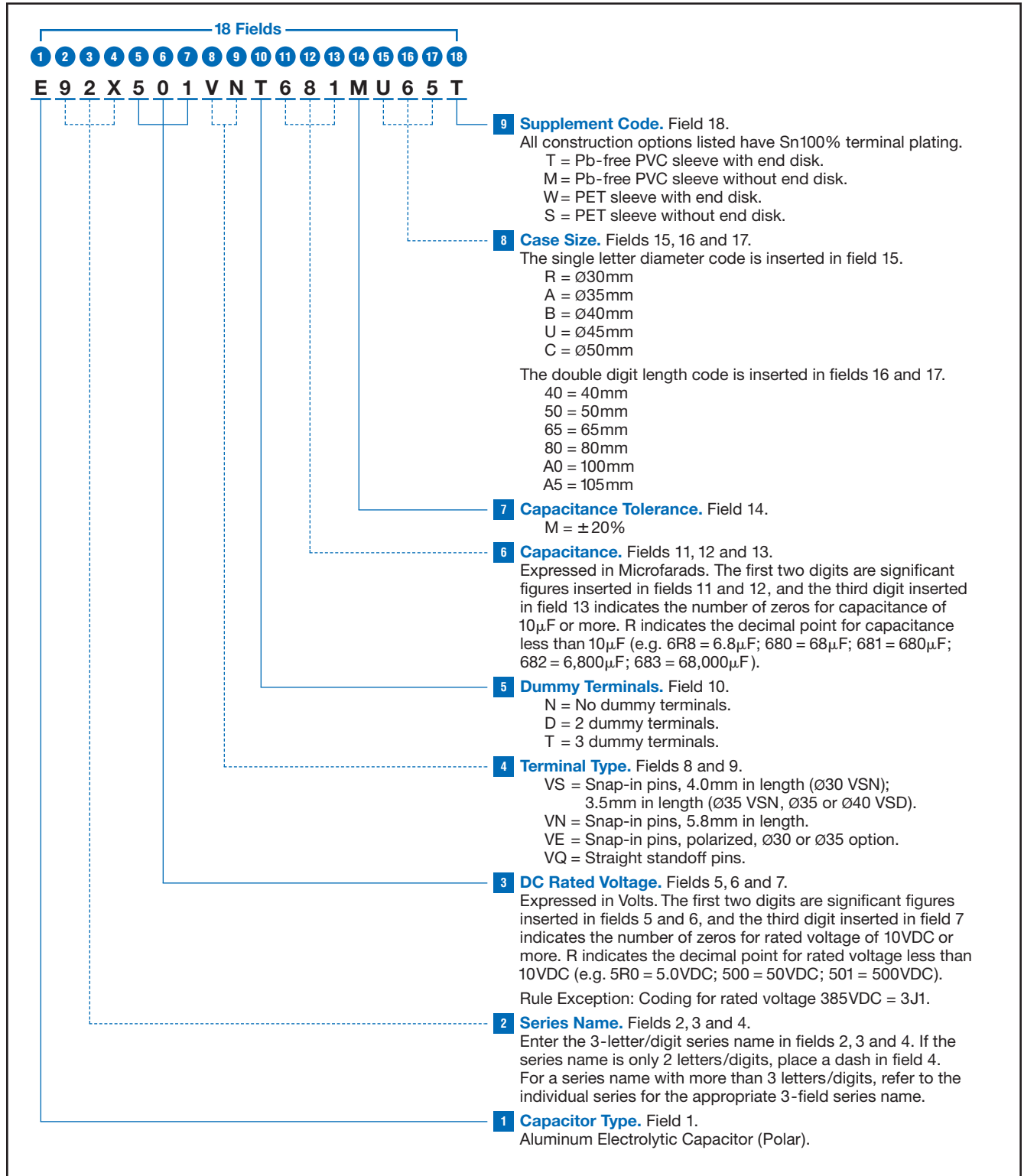
* Use the blank terminals for mechanical support only. The blank terminals must not be connected to a solder trace on the PC board but be electrically isolated from the negative and positive terminals.

** The vent may be located either on the bottom or side of the can.

*** The black sleeve with gray stripe negative pin indicator is standard. Also note in some cases, the sleeve color may change slightly due to the operating conditions, however, the discoloration will not impair capacitor function.

U92X Series

Part Numbering System for U92X Series When ordering, always specify complete 18-field global part number.



U92X Series

Standard Voltage Ratings - Snap Mount

Rated Voltage (WVDC)	Capacitance (µF)	Global Part Number†	Nominal Case Size* D × L (mm)	Case Size Code	Maximum ESR (Ω) at +20°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
350 Volts 400 Volts Surge	330	E92X351VSN331MR40T	30 × 40	R40	0.302	2.1
	470	E92X351VSN471MR50T	30 × 50	R50	0.212	2.8
	680	E92X351VSN681MR65T	30 × 65	R65	0.146	3.7
	470	E92X351VSN471MA40T	35 × 40	A40	0.195	3.1
	680	E92X351VSN681MA50T	35 × 50	A50	0.135	4.2
	1,000	E92X351VND102MA65T	35 × 65	A65	0.092	5.4
	1,200	E92X351VND122MA80T	35 × 80	A80	0.076	6.4
	1,500	E92X351VND152MAA0T	35 × 100	AA0	0.061	7.9
	820	E92X351VND821MB50T	40 × 50	B50	0.121	4.6
	1,200	E92X351VND122MB65T	40 × 65	B65	0.083	6.0
	1,500	E92X351VND152MB80T	40 × 80	B80	0.066	7.3
	1,800	E92X351VND182MBA0T	40 × 100	BA0	0.055	8.7
	1,000	E92X351VNT102MU50T	45 × 50	U50	0.107	5.2
	1,500	E92X351VNT152MU65T	45 × 65	U65	0.072	6.9
	1,800	E92X351VNT182MU80T	45 × 80	U80	0.060	8.2
	2,700	E92X351VNT272MUA5T	45 × 105	UA5	0.040	11.1
	1,200	E92X351VNT122MC50T	50 × 50	C50	0.103	5.4
	1,800	E92X351VNT182MC65T	50 × 65	C65	0.069	7.3
2,200	E92X351VNT222MC80T	50 × 80	C80	0.056	8.8	
3,300	E92X351VNT332MCA5T	50 × 105	CA5	0.037	12.2	
385 Volts 435 Volts Surge	270	E92X3J1VSN271MR40T	30 × 40	R40	0.339	2.0
	390	E92X3J1VSN391MR50T	30 × 50	R50	0.235	2.6
	560	E92X3J1VSN561MR65T	30 × 65	R65	0.164	3.5
	390	E92X3J1VSN391MA40T	35 × 40	A40	0.225	2.9
	560	E92X3J1VSN561MA50T	35 × 50	A50	0.156	3.9
	820	E92X3J1VND821MA65T	35 × 65	A65	0.107	5.0
	1,000	E92X3J1VND102MA80T	35 × 80	A80	0.088	5.9
	1,200	E92X3J1VND122MAA0T	35 × 100	AA0	0.073	7.2
	680	E92X3J1VND681MB50T	40 × 50	B50	0.135	4.4
	1,000	E92X3J1VND102MB65T	40 × 65	B65	0.092	5.8
	1,200	E92X3J1VND122MB80T	40 × 80	B80	0.076	6.8
	1,800	E92X3J1VND182MBA0T	40 × 100	BA0	0.051	9.0
	1,000	E92X3J1VNT102MU50T	45 × 50	U50	0.100	5.4
	1,200	E92X3J1VNT122MU65T	45 × 65	U65	0.083	6.4
	1,500	E92X3J1VNT152MU80T	45 × 80	U80	0.066	7.7
	2,200	E92X3J1VNT222MUA5T	45 × 105	UA5	0.045	10.4
	1,200	E92X3J1VNT122MC50T	50 × 50	C50	0.096	5.7
	1,500	E92X3J1VNT152MC65T	50 × 65	C65	0.077	6.9
2,200	E92X3J1VNT222MC80T	50 × 80	C80	0.052	9.1	
2,700	E92X3J1VNT272MCA5T	50 × 105	CA5	0.043	11.4	
400 Volts 450 Volts Surge	270	E92X401VSN271MR40T	30 × 40	R40	0.339	2.0
	390	E92X401VSN391MR50T	30 × 50	R50	0.235	2.6
	470	E92X401VSN471MR65T	30 × 65	R65	0.195	3.2
	390	E92X401VSN391MA40T	35 × 40	A40	0.225	2.9
	560	E92X401VSN561MA50T	35 × 50	A50	0.156	3.9
	680	E92X401VND681MA65T	35 × 65	A65	0.129	4.6
	1,000	E92X401VND102MA80T	35 × 80	A80	0.088	5.9
	1,200	E92X401VND122MAA0T	35 × 100	AA0	0.073	7.2
	680	E92X401VND681MB50T	40 × 50	B50	0.135	4.4
	1,000	E92X401VND102MB65T	40 × 65	B65	0.092	5.8
	1,200	E92X401VND122MB80T	40 × 80	B80	0.076	6.8
	1,500	E92X401VND152MBA0T	40 × 100	BA0	0.061	8.2
	820	E92X401VNT821MU50T	45 × 50	U50	0.121	4.9
	1,200	E92X401VNT122MU65T	45 × 65	U65	0.083	6.4

† For construction and terminal options, refer to the part numbering system for descriptions and codes.

* Refer to diagram of dimensions for detailed case size specifications.

U92X Series

Standard Voltage Ratings - Snap Mount

Rated Voltage (WVDC)	Capacitance (µF)	Global Part Number†	Nominal Case Size* D × L (mm)	Case Size Code	Maximum ESR (Ω) at +20°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
400 Volts 450 Volts Surge	1,500	E92X401VNT152MU80T	45 × 80	U80	0.066	7.7
	2,200	E92X401VNT222MUA5T	45 × 105	UA5	0.045	10.4
	1,200	E92X401VNT122MC50T	50 × 50	C50	0.093	5.6
	1,500	E92X401VNT152MC65T	50 × 65	C65	0.074	7.0
	1,800	E92X401VNT182MC80T	50 × 80	C80	0.062	8.4
	2,700	E92X401VNT272MCA5T	50 × 105	CA5	0.041	11.6
420 Volts 470 Volts Surge	220	E92X421VSN221MR40T	30 × 40	R40	0.389	1.9
	330	E92X421VSN331MR50T	30 × 50	R50	0.284	2.4
	470	E92X421VSN471MR65T	30 × 65	R65	0.202	3.2
	390	E92X421VSN391MA40T	35 × 40	A40	0.251	2.8
	470	E92X421VSN471MA50T	35 × 50	A50	0.183	3.6
	680	E92X421VND681MA65T	35 × 65	A65	0.130	4.6
	820	E92X421VND821MA80T	35 × 80	A80	0.101	5.5
	1,200	E92X421VND122MAA0T	35 × 100	AA0	0.078	7.0
	680	E92X421VND681MB50T	40 × 50	B50	0.142	4.3
	820	E92X421VND821MB65T	40 × 65	B65	0.102	5.5
	1,200	E92X421VND122MB80T	40 × 80	B80	0.079	6.6
	1,500	E92X421VND152MBA0T	40 × 100	BA0	0.061	8.2
	820	E92X421VNT821MU50T	45 × 50	U50	0.124	4.8
	1,000	E92X421VNT102MU65T	45 × 65	U65	0.089	6.2
	1,200	E92X421VNT122MU80T	45 × 80	U80	0.069	7.6
	1,800	E92X421VNT182MUA5T	45 × 105	UA5	0.051	9.9
	1,000	E92X421VNT102MC50T	50 × 50	C50	0.109	5.2
	1,200	E92X421VNT122MC65T	50 × 65	C65	0.078	6.8
	1,800	E92X421VNT182MC80T	50 × 80	C80	0.061	8.5
	2,200	E92X421VNT222MCA5T	50 × 105	CA5	0.044	11.2
450 Volts 500 Volts Surge	220	E92X451VSN221MR40T	30 × 40	R40	0.411	1.8
	330	E92X451VSN331MR50T	30 × 50	R50	0.300	2.3
	390	E92X451VSN391MR65T	30 × 65	R65	0.213	3.1
	330	E92X451VSN331MA40T	35 × 40	A40	0.304	2.5
	470	E92X451VSN471MA50T	35 × 50	A50	0.193	3.5
	560	E92X451VND561MA65T	35 × 65	A65	0.138	4.4
	820	E92X451VND821MA80T	35 × 80	A80	0.107	5.4
	1,000	E92X451VND102MAA0T	35 × 100	AA0	0.082	6.8
	560	E92X451VND561MB50T	40 × 50	B50	0.163	4.0
	820	E92X451VND821MB65T	40 × 65	B65	0.117	5.1
	1,000	E92X451VND102MB80T	40 × 80	B80	0.091	6.2
	1,200	E92X451VND122MBA0T	40 × 100	BA0	0.070	7.7
	680	E92X451VNT681MU50T	45 × 50	U50	0.137	4.6
	1,000	E92X451VNT102MU65T	45 × 65	U65	0.098	5.9
	1,200	E92X451VNT122MU80T	45 × 80	U80	0.076	7.2
	1,800	E92X451VNT182MUA5T	45 × 105	UA5	0.056	9.4
	820	E92X451VNT821MC50T	50 × 50	C50	0.115	5.1
	1,200	E92X451VNT122MC65T	50 × 65	C65	0.083	6.6
	1,500	E92X451VNT152MC80T	50 × 80	C80	0.064	8.2
	2,200	E92X451VNT222MCA5T	50 × 105	CA5	0.047	10.8
500 Volts 550 Volts Surge	150	E92X501VSN151MR40T	30 × 40	R40	0.557	1.6
	180	E92X501VSN181MR50T	30 × 50	R50	0.464	1.9
	270	E92X501VSN271MR65T	30 × 65	R65	0.310	2.6
	220	E92X501VSN221MA40T	35 × 40	A40	0.362	2.3
	270	E92X501VSN271MA50T	35 × 50	A50	0.295	2.8
390	E92X501VND391MA65T	35 × 65	A65	0.204	3.6	

† For construction and terminal options, refer to the part numbering system for descriptions and codes.

* Refer to diagram of dimensions for detailed case size specifications.

U92X Series

Standard Voltage Ratings - Snap Mount

Rated Voltage (WVDC)	Capacitance (µF)	Global Part Number†	Nominal Case Size* D × L (mm)	Case Size Code	Maximum ESR (Ω) at +20°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
500 Volts 550 Volts Surge	560	E92X501VND561MA80T	35 × 80	A80	0.142	4.7
	680	E92X501VND681MAA0T	35 × 100	AA0	0.117	5.7
	390	E92X501VND391MB50T	40 × 50	B50	0.204	3.6
	560	E92X501VND561MB65T	40 × 65	B65	0.142	4.6
	680	E92X501VND681MB80T	40 × 80	B80	0.117	5.5
	820	E92X501VND821MBA0T	40 × 100	BA0	0.097	6.5
	560	E92X501VNT561MU50T	45 × 50	U50	0.156	4.3
	680	E92X501VNT681MU65T	45 × 65	U65	0.129	5.2
	1,000	E92X501VNT102MU80T	45 × 80	U80	0.088	6.7
	1,200	E92X501VNT122MUA5T	45 × 105	UA5	0.073	8.2
	680	E92X501VNT681MC50T	50 × 50	C50	0.141	4.6
	1,000	E92X501VNT102MC65T	50 × 65	C65	0.096	6.2
	1,200	E92X501VNT122MC80T	50 × 80	C80	0.080	7.4
	1,800	E92X501VNT182MCA5T	50 × 105	CA5	0.053	10.2

† For construction and terminal options, refer to the part numbering system for descriptions and codes.

* Refer to diagram of dimensions for detailed case size specifications.